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Behavioristic descriptions of paranormal behaviors

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Behavioristic descriptions and explanations of spontaneous psi events are discussed. The problems evoked by mentalistic terminology and excessive metaphorical language can be attenuated by systematically applying the language, methodology and concepts of radical behaviorism. From this perspective, the limitations of human verbal behavior associated with aversive stimuli or infrequent conditioning paradigms are considered fundamentally important. Psi behaviors are considered normal response sequences displayed within unusual contexts. Although psi behaviors can be viewed as artifacts of human verbal learning, behavioristic operations can accommodate as yet unspecified psi mechanisms. Analogs of state-dependence, discriminative stimulus-conditioned stimulus responding, response contiguity and stimulus generalization are demonstrated for psi behaviors.

Although paranormal (psi) events may appear to display bizarre, deviant or unexpected characteristics, these conditions are not sufficient bases to dismiss the operation of known behavioral principles. Traditionally, there has been a tendency for parapsychologists to reflexively reject behavioristic explanations, from radical Skinnerian to hybrid stimulus-response approaches, in favor of more mentalistic and non-physical speculations. Such theories have generated verbal behavior whose semantic structure is often as unusual as the alleged psi event involved. Systematic data collection of the verbal behaviors describing alleged psi events (Persinger, 1974a) has indicated that the application of known behavioristic principles can adequately describe and "explain" reported instances of psi phenomena. In this paper, a few elementary behavioral operations will be applied to patterns of sponteneous psi cases, especially telepathy-clairvoyance (T-C) and precognition.

Rejection of behavioristic explanations of paranormal behavior is often based upon: (1) excessive preoccupation with the bizarre characteristics of singular and infrequent episodes, (2) implicit assumptions of source homogeneity for events given the same label, and (3) confounding contributions from metaphorical and emotionally loaded language systems that evoke large visceral changes in the reader but few quantitatively testable

hypotheses. Examples of these approaches are replete within the popular literature (e.g., Spraggett, 1974). Frequently the aversion to behavioristic descriptions of paranormal events is complicated by the investigators' private psi experiences, inappropriate understanding of basic behavioral operations, or value judgements concerning the "excessive mechanistic view of the human condition" rather than upon sound empirical testing. To these investigators the language of radical behaviorists may appear cumbersome since words and phrases are selected that have minimal pre-association with mentalistic or non-measurable connotations.

All of these approaches ignore the basic problems of human verbal behavior, displayed as either talking, textual or private ("thinking") responses (Skinner, 1957) when displayed within the context of unexpected or aversive stimuli (e.g., death associated events) which comprise the majority of psi instances. Like other behaviors, private response sequences may undergo marked disruption in the presence of aversive stimuli (Figure 1).

AVERSIVE STIMULI: DISORGANIZERS OF RESPONSE PATTERNS

GIVEN: $R_1 - R_2 - R_3 - R_4 - R_5 \ldots . R_N$

A. DISRUPTION/SUPPRESSION OF ONGOING BEHAVIOURS

$R_1 - R_2 ---------- R_5$

B. DISRUPTION/SUPPRESSION OF RECALL SEQUENCE

$R_1 - R_3 - R_4 - R_2 - R_5$

C. ALTERATION/SUBSTITUTION OF RESPONSE SEQUENCES

$R_1 - R_c - R_c - R_4 - R_5$

FIGURE 1 Different disrupting effects of aversive stimuli such as death or withdrawal of a positive reinforcer upon conditioned response sequences that compose verbal behavior (vocal or "thought").

Since "thinking" and its correlates such as "memory" are a primary reference by which the human organism responds to (measures) the environment, alterations in these systems may not become apparent – especially when the person attempts to respond to his own behaviors. The memory of response sequences may be suppressed (forgotten), altered (inaccurate serial recall) or substituted (confabulation). These problems have been examined in detail elsewhere (Persinger, 1976).

The difficulty of systematically demonstrating the operation of behavioral mechanisms in psi events is further complicated by all or none reliance upon fixed-label classes. The possibility must be realized that psi events placed within the same category, e.g., telepathy-clairvoyance or precognition, may share only the verbal descriptor rather than a singular etiology or conceptual source. This problem is depicted in Figure 2, where the report of an apparition may be evoked by a variety of independent stimulus sources. In this case, the "classifications" of psi events reflect the limitations of the human verbal animal with its small number of labeling responses when confronted with a large, heterogeneous population of infrequent, unexpected, bizarre and disrputing stimuli. The problem of a "conceptual core" (Persinger, 1976) pervades paranormal research where anything that is bizarre or

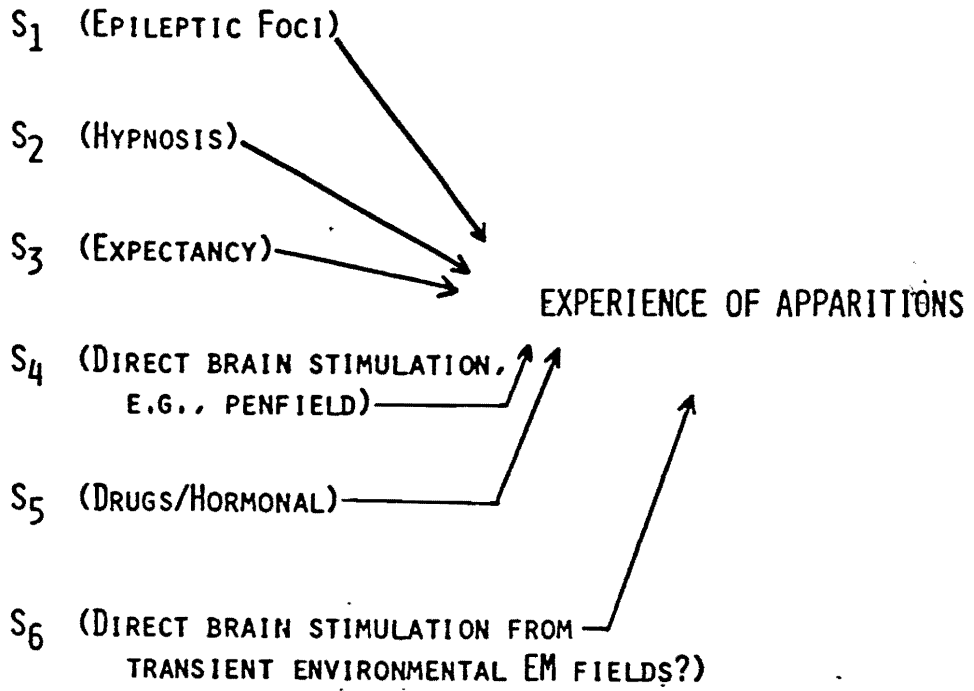

FIGURE 2 Demonstration of the homogeneous label problem whereby events placed within the rubric of "apparitions" are actually evoked by independent stimulus sources.

unexpected, from guessing Zener cards significantly below or above chance to having a dream at the time of a parent's death, is assumed to be examples of a homogeneous source: ESP.

When an unusual measurement appears to violate the operations of an accepted pattern, most scientists question the nature of the measurement. For example, if a particular measurement of magnetic field strength around an object with a low probability geometry is found to be disparate from principle, then one is more likely to question the nature of the measurement or the complications of the application geometry rather than the principle itself. This procedure is especially true if the measurement device is known to be unreliable in certain contexts and the alleged event is infrequent.

Not only are psi responses infrequent relative to the total number of responses displayed by a single human organism, but the measurement is usually through some aspect of verbal behavior. Consequently, before principles that adequately describe other aspects of human behavior are rejected in parapsychology, hypotheses generated from them should be tested in an objective and dispassionate manner.

BEHAVIORISTIC DESCRIPTIONS OF PSI RESPONSES

Paranormal behaviors and occurrences can be described as changes in the organism and the environment produced by presently unknown mechanisms that seem to involve processes not predictable from known patterns of nature (Persinger, 1974a). The phrases "presently unknown mechanisms" and "seem to involve" are important since the mechanisms may be quite predictable from and commensurate with present assumptions once more data are collected and confounding metaphorical descriptions are eliminated. Paranormal behaviors may be described also as ordinary responses displayed within unusual stimulus-response contexts (Truzzi, 1971). Parenthetically, alleged occurrences of psychokinesis also do not demand the solicitation of either non-physical or deviant hypotheses. Most manifestations, e.g., the Geller effects, involve relatively small energies well within the capability of the human organism or its environment and are not beyond the scope of known physical principles. The problems lays within the exact mechanism of application.

A behavioristic explanation of psi responses would require the involvement of learning, i.e., previous, more or less permanent associations between the putative stimulus (agent, target object) and the display of the paranormal behavior. The learned response may not be the same as the psi response emitted in a particular episode, although the characteristics should share some functional similarity to the initial acquisition (response general-

ization). One would expect that certain reinforcement histories (patterns of stimulus-response relationships) would increase an organism's probability of displaying psi responses; since psi responses appear to be displayed more frequently during alterations in normal behavior, (when the person reports that "awareness" is not occurring), people reinforced for such behavioral patterns should be psi prone.

The reinforcement mechanisms by which the paranormal-relevant stimuli and responses are associated need not be elucidated first in order to study psi events. Reinforcement is a description of behavioral operations by which alterations in a given response's probability are associated with the presence/absence of a stimulus. Stimuli that are associated with increases in response occurrences are called positive reinforcers; those which are associated with decreases in response displays are called punishers. A reinforcer is defined not by its apparent hedonistic qualities, but by its consequences upon the response rate. Reinforcement schedules in which the reinforcing stimulus precedes the response have been called respondent paradigms while those in which the reinforcing stimulus succeeds the response have been called operant paradigms (e.g., Millenson, 1967).

From a behavioristic context, psi behaviors would be regarded as consequences of reinforcement schedules, although the exact pattern may not be specified. A stringent application of the principles would demand that alleged psi events are artifacts of human learning, especially verbal conditioning. Psi responses would exist by necessity since the human organism is a locus of many behavioral patterns (systems) that are only probabilistically related. Consequently, conditioning can take place in systems that are not totally within the control of "awareness" behaviors. The person would be "unconscious" of the conditioning effects. Without the display of awareness behaviors during the conditioning, the person may describe a stimulus-response occurrence as bizarre, odd or by definition "unexpected" and insist upon the existence of a psi event. The locus-oriented reference of psychological proofs, a common characteristic of human verbal behavior, would confound the observation. Common examples of locus-oriented references for proofs are: "ghosts exist because I saw one," "ghosts do not exist because I never saw one," or "ESP exist because it's happened to me," always with the emphasis upon "I."

Figure 3 demonstrates a stringent application of the theory that spontaneous psi events are artifacts of verbal learning. In this instance, the mother and daughter have been exposed many times to the pairing of the tea kettle sound with the taste of tea (shared reinforcement history). The sound has become a CS for other response systems (visceral-biochemical changes) as well as their verbal behavior. Now suppose the two women are talking and not responding ("not paying attention") to the radio as a tea kettle sound is

T-C REPORTS AS CONCOMITANT CONDITIONING

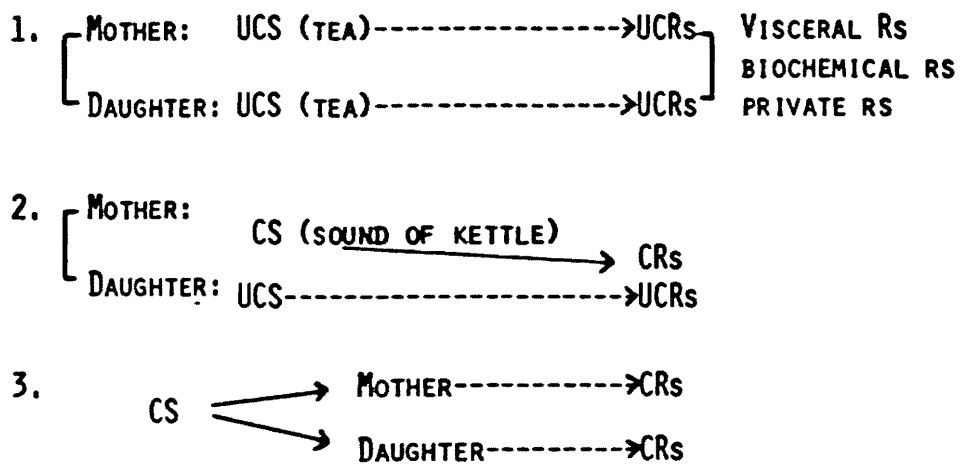

FIGURE 3 Conditioning procedures which could result in an erroneous conclusion of telepathy-clairvoyance (*T-C*) between mother and daughter. Because of shared conditioning histories: similar unconditioned stimuli (*UCSs*), unconditioned responses (*UCRs*), conditioned stimuli (*CSs*) and conditioned response (*CRs*), the presentation of the *CS* elicits separate and independent private responses in both mother and daughter; there would be no "communication" between the two organisms.

presented. The CS elicits changes independently in both women and shortly thereafter when the talking ceases, the visceral consequences influence the verbal behavior. At this point, the mother reports an "impulse" to have tea and the daughter responds with amazement that she "was thinking of the same thing." The conclusion that they "read each other's thoughts" would be erroneous; rather, they independently responded to the same stimulus. Similar problems have appeared in alleged demonstrations of laboratory psi behaviors. For example, Sanjar (1969) found that apparent coincident autonomic activity in closely related persons was a function of common environmental elements (prolonged seating, temperature) to which the "agent" and "percipient" similarly and independently responded.

Both operant and respondent conditioning have been demonstrated many times without the involvement of awareness (Hefferline and Keenan, 1963; Hefferline and Perera, 1963; Hefferline, Bruno and Camp, 1973). The stimuli to which the human organism can respond (without awareness) are numerous, and may in themselves have little initial intrinsic reinforcement

value. The critical feature is that these stimuli be present during the initial conditioning. The presence of these stimuli may be quite accidental and may originate from many aspects of the organism's environment and include subtle smells, verbal phrases, incidental background cues or even geophysical-meteorological changes; although diffuse and not easily detectable by the organism, they enter into the learning situation. When these stimuli are presented later, they would evoke the responses associated with them. Such an approach in conjunction with the noted disruptions of verbal behavior in the midst of death/crisis stimuli (Persinger, 1976) would argue that spontaneous psi events are artifacts of human verbal behavior rather than "real" events.

BEHAVIORISTIC PATTERNS IN PSI EVENTS

However application of behavioristic explanations and descriptions to psi events does not require necessarily the specification of mechanism nor the assumption that the psi events are veridical. Since these events are behaviors, they should display characteristics common to less questionable response patterns. A few of these characteristics may be called: state dependence, discriminative responding, stimulus-response contiguity, and stimulus generalization.

State-dependent behavior

Evidence for the operation of state-dependent learning or the contribution of discriminative stimuli should be demonstrable within paranormal reports. Qualitatively phrased, the principle demands that a given response display is more probable as the situation approaches the conditions under which the response was first acquired or was most frequently reinforced. Learning or memory displayed under specific physiological conditions highly similar to the period of acquisition may be called state-dependent. An example of state-dependent memory would be the display of a learned response acquired under calcium injections during calcium intoxication but not under normal conditions (John, 1967).

If state-dependent operates in paranormal responses, then the conditions under which such events are reported to occur should be very similar. About half of paranormal events occur during sleep, especially around dream periods. Other instances of psi events occur during similar disruptions of normal awareness behavior such as day dreaming, washing dishes or periods of blankness while driving, typified by verbal reports like "I don't remember thinking about anything" or "I don't remember what I was doing." Several

authors have referred to these instances as "altered states of consciousness"; in other words, reports that awareness was occurring are not frequent. Predictably, psi behaviors appear to extinguish in laboratory card guessing experiments conducted during periods of normal thinking or activity.

However the similarity of organismic conditions during psi events does not indicate when the initial learning of the propensity to display psi responses occurred. One could assume, by observing the predominant mode by which psi events are displayed, that the initial learning took place in a situation very similar to dreaming. Whether the initial conditioning situation occurred once for a brief period or frequently and intermittently for long durations before the actual psi event is not clear. At this point, one could not dismiss the possibility that the propensity for psi events was conditioned during early childhood when the human organism was characterized by relatively passive situations where respondent paradigms predominated.

In the respondent situation, conditioned responses are established and elicited with relatively little organismic control or voluntary contribution relative to operant schedules. If such early respondent models were instrumental in the formation of psi learning then the occurrence of these events during dreams would reflect their similarity to the initial respondent situations where the organism was a passive agent inundated by series of events over which it had little control. Such reports of inundation by intense experiences over which the viewer had no control typify not only psi events but intense dreams and brain conditions that release intense imagery into the waking state (Torda, 1969).

The importance of dream-like behaviors displayed by the percipient for increasing the probability of a psi event may have empirical support. Ullman's and Krippner's famous experiments (Ullman, Krippner and Vaughn, 1973) indicate the psi events may occur more readily within REM (rapid eye movement) periods. During the dream period, the adult human organism displays intense autonomic responses and subjective reports that stimulate the passive organismic condition of infancy. That complex and relatively permanent learning can occur during REM sleep has been demonstrated experimentally as well. Evans, Gustafson, O'Connel, Orne and Shor (1966) found that suggestions given during dream sleep were not displayed when these instructions were given during normal waking conditions ("waking amnesia") but could be displayed again weeks later with little intermittent reinforcement when the subjects once again entered stage 1 sleep.

When the dream conditioning data and the Ullman and Krippner data are combined, another type of psi event: precognition, can be recruited within the framework of a learning model. Precognition of events for a person who shares the "percipient's" reinforcement history (e.g. husband, wife) may only reflect the consequences of learning during the dream period. With this

approach, the precognitive dream does not violate temporal properties. Instead, the "percipient's" dream may be considered a stimulus (analog of a suggestion) to which the dreaming "agent" responds later when he or she is again in a similar organismic state. Periods characterized by a decrease in awareness such as day dreaming while driving a car would increase the probability that the response (e.g. have an accident) learned the previous night be displayed. In this model, the percipient would not be the "receiver" of some future event, but the actual stimulus source of the behavior displayed later by the person traditionally called the agent. Predictably the person adversely affected by the precognitive dream stimuli should display marked suggestibility profiles; intelligence would not be a prophylactic (Speigel, 1974).

S^D/CS effects

When a neutral event is associated with the display of a response and the delivery of a reinforcer, the event acquires reinforcing properties of its own. Consequently, the presentation of that stimulus will also influence the probability of response occurrence. The new stimulus is called a conditioned stimulus (*CS*) when presented within a respondent paradigm and a discriminative stimulus (S^D) when presented within a operant paradigm. If a particular frown on the father's face systematically precedes the delivery of a slap and the elicitation of emotional responses, then the facial feature soon begins to elicit similar responses when presented by itself. If a house is a S^D for a wife' request for a loaf of bread, then the husband may "forget" the request until he once again sees the house that evening. In this case the response is considered to be under the control of the S^D.

One would predict as well that neutral stimuli paired with the initial learning of psi responses would increase the likelihood of psi responses when presented independently. Consequently, if psi learning was established night after night during the dream condition, then objects within the vicinity (spatial contiguity) or period (temporal contiguity) of the learning should elicit the responses. In spontaneous cases, frequent reports allude to the occurrence of psi events during the waking state when the percipient was walking through the bedroom, sitting on the bed or observing some event or object associated with the sleeping environment.

Stimulus-response contiguity

Like other forms of learning, the elicitation of a response by some paranormal stimulus should be accompanied by *other responses* that occurred contiguously in time and space during the initial (psi) response acquisition. In a normal situation, the viewing of an old family picture may evoke not only

memories about the actual event but also old phrases used at that time (but no longer displayed) and associations with those phrases. If the propensity for paranormal responding is established during early childhood, then the presentation of a paranormal stimulus should evoke memories typical of the time of learning.

Apparitions, which often appear to be mothers, fathers or some parental surrogate, best depict this possibility. They occur during periods of helplessness (sudden, unexpected crisis, such as death of parent) to the percipient; predictably the apparition behavior closely simulates parent-child relations. The apparition may appear at the foot of the bed or the face may appear over the percipient as he/she looks up at the ceiling. Frequently, the apparition appears, smiles and disappears or mentions the percipient's name before disappearing. These behaviors are strongly reminiscent of normal responses displayed by parents to young children while in a prone, near-sleep condition. If the initial propensity for psi events were established during this time, then one would expect that the parent would appear in a manner similar to that period. A significant portion of post-mortem apparition events refer to the parent as being younger or more healthy looking. In those few cases where estimates were made for how young the apparition appeared, the time usually reflected the age of the percipient.

Memories of more diffuse stimuli of events contiguous with the initial learning situation should also occur during the presentation of paranormal stimuli. Many of these events may not have discrete verbal labels but only be reported as "feelings" or unusual sensations that cannot be placed into words. Sounds of swishing garments, "friendly" touches, vibrations from footsteps or feelings of being stared upon are correlates of the post-mortem apparition. All of these events could be interpreted within the framework of early childhood stimuli that preceded or accompanied the learning situation responsible for the propensity to display later psi responses.

If such stimulus-response contiguity is a primary factor for psi event displays, then different cultures typified by different early learning paradigms should show persistent patterns in the contents of the reports. However the importance and predominance of the parental figure, or of some surrogate, including gods, should by necessity of primate biology still persist as a central theme.

It should be emphasized that the learning model does not insist that the propensity for psi behavior be acquired only during childhood. Technically, the reporter could have learned the behavior at any time and in associaton with any person or object. The minimal distance between the percipient and later agent required for learning to occur is not clear. What appears to be critical is the functional contiguity of the two involved. Conditions that increase the probability of a functional connection, increase the probability

of a psi reponse. In this respect, spouses, members of the immediate family and perhaps even friends become primary psi targets merely because they would: (1) probabilistically be more spatially and temporally contiguous with the percipient during the initial learning paradigm and (2) occupy a major portion of the percipient's total response time. Consequently, anyone or anything could be involved in a psi-event with the percipient, the probability being a function of the amount of organismic time committed to the agent. Identical twins, who share highly similar reinforcement schedules and who are frequently within close functional contexts are prime candidates for psi responses.

Stimulus generalization

Stimulus generalization involves the display of a response acquired in the presence of a particular stimulus when another, similar stimulus is presented. Thus if a monkey acquires a response in the presence of a particular frequency sound, it will display the response when a similar sound is presented. However the probability that the response will be displayed decreases in an exponential-like manner as the new stimulus becomes less and less similar.

One would predict that the elicitation of a response to any paranormal stimulus will depend upon its similarity to the paranormal stimulus with which conditioning was originally or most recently established. A gradient of response probabilities should exist that reflects the physical similarity of the paranormal stimuli. Such a pattern is reflected in Figure 4 where the percents of putative agents from the immediate family (e.g., husband, wife, brothers, sisters), the peripheral family (e.g., uncles, grandmothers), friends, and strangers for different categories of psi events: *T-C*, precognition and post-mortem apparitions, are shown. For comparison, a typical generalization gradient for a learned response as a function of stimulus dissimilarity from the original wavelength (*CS* or S^D) for a test animal is also presented. There is a marked similarity in response gradients for different categories of psi-events. Immediate members of the family with whom the likelihood of psi learning is most probable, are the most frequent agents while peripheral family and friends are involved less frequently.

The presence of strangers in the gradient is not an anomaly; rather it is a necessary condition of the learning model. Although the description of particular paranormal stimuli have not been discussed in this article, there would be an upper finite limit for the number of characteristics that: (1) would compose the paranormal stimulus, and (2) the percipient could discriminate. By chance alone, there would be some human beings, not related to the percipient, who share some of the required paranormal

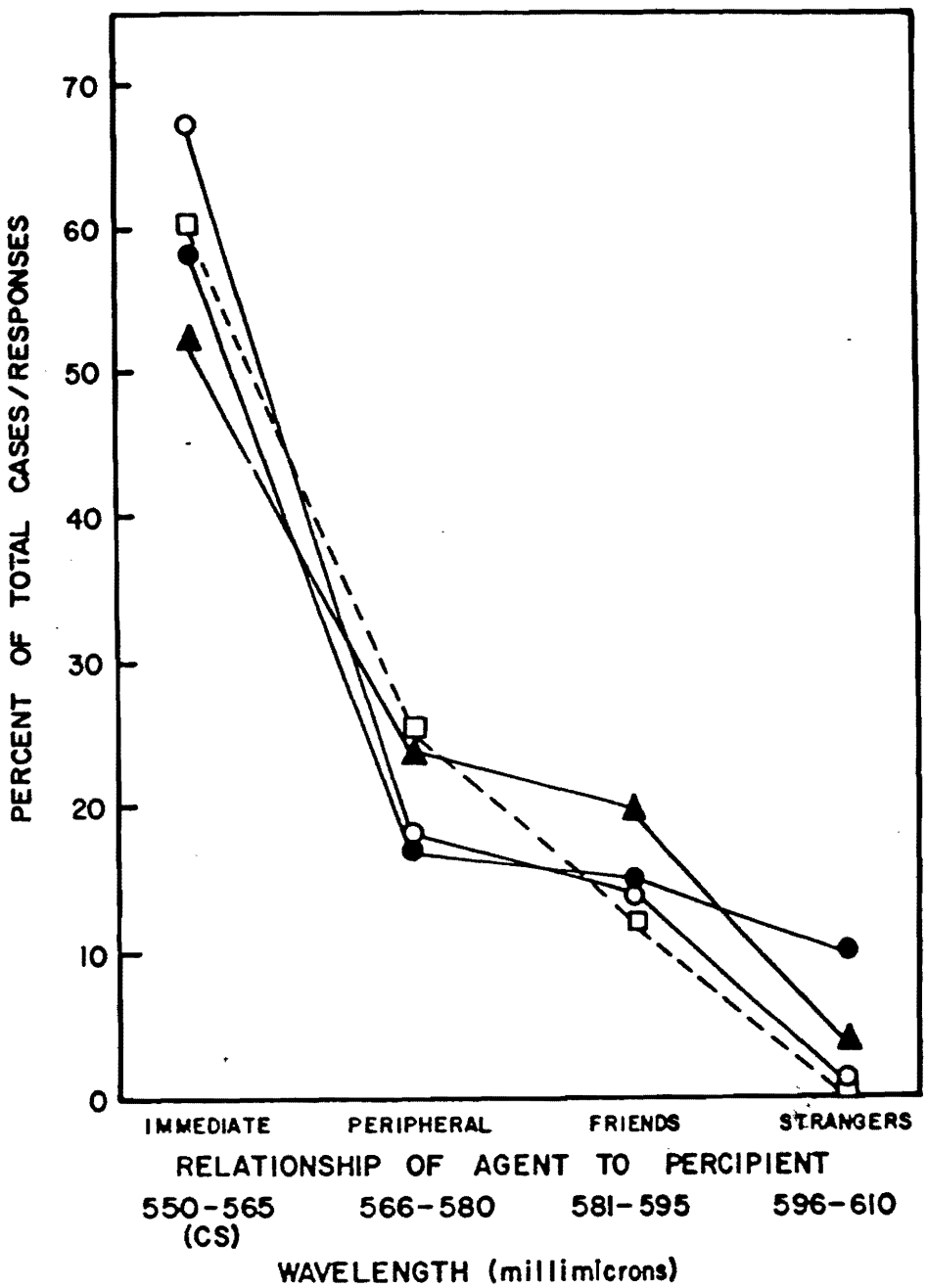

FIGURE 4 Percent of total cases involving putative agents from immediate family, peripheral family, friend-acquaintance and stranger categories for telepathy-clairvoyance (closed circles), precognition (open circles) and post-mortem apparition (closed triangle reports. A stimulus generalization curve (open square) for the percent total responses displayed by a test animal for various wavelengths relative to the wavelength (*CS*) associated with initial conditioning is shown for comparison (from Persinger, 1974).

stimulus characteristics. When such a person is placed within an operational framework (e.g., death) to emit a paranormal stimulus, then the percipient who has the appropriate reinforcement history will respond to these events. The evoked images should be similar to the initially learned responses such that the percipient may report that the "apparition" seemed uncannily familiar. Without stimulus generalization gradients, the psi prone organism would be inundated indiscriminately with paranormal stimuli over which it would have little voluntary control.

The operation of stimulus generalization would not only allow responses to paranormal stimuli associated with strangers but also allow recently acquired reinforcers, such as husbands or wives, to become possible agents. Through a process known as fading, a neutral stimulus can be slowly shifted across the stimulus generalization gradient until it displays the ability to control the occurrence of the response instead of the original stimulus (Persinger, 1974b).

FINAL COMMENT

The behavioristic approach described in this paper requires neither the isolation of physical correlates for psi events nor the assumption that psi events involve unusual operations. Conceptually, these events can be described in terms of stimuli, responses and reinforcement patterns. Often any systematic or common operations that might be associated with psi events are obscured by mentalistic language and unsubstantiated assumptions about human thinking behavior. The methodology available within a behavioristic framework could allow a clarification of phenomena now obscured. By utilizing the complex, quantitative and predictive capabilities of known behavioral principles, we can further isolate the details required to determine the nature of the mechanisms involved.

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